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SCOTTISH HOME AND HEALTH DEPARTMENT

Central Health Services Council
SCOTTISH HEALTH SERVICES COUNCIL

Hospital Treatment of Acute Poisoning

*Report of the Joint Sub-Committee of the
Standing Medical Advisory Committees*

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APPOINTMENT

1. We were appointed in 1966 jointly by the Standing Medical Advisory Committees of the Central Health Services Council for England and Wales and the Health Services Council for Scotland :

"To review the arrangements for treatment in hospital of patients suffering from acute poisoning by drugs and certain other domestic substances, and their after-care".

2. We noted that, by contrast to the Atkins' Sub-Committee* which reported in 1962, our remit was not confined to emergency measures alone but covered all the arrangements for treatment, including after-care, though we accepted with some reluctance that prevention was not our concern.

3. We met ten times and considered statistical evidence furnished by the General Register Office and others, evidence provided from within our own membership and also that from other selected sources. In this connection we are grateful especially to Dr. E. D. Acheson and Dr. J. G. Evans of the Oxford Record Linkage Study; to Dr. R. A. N. Hitchens of the Department of Social and Preventive Medicine, Welsh National School of Medicine, Cardiff; and to numerous others who submitted written information; and to Dr. H. Keith, Dr. J. B. Wood and Dr. J. A. Vyse, with whom we were able to discuss in person the arrangements in hospitals where they were involved in the care of patients suffering from acute poisoning.

PREVIOUS RECOMMENDATIONS AND ACTION

4. The Atkins' Sub-Committee recommended that:

- (i) All casualty departments should have adequate works of reference on poisoning and a handbook on the immediate treatment of poisoning.
- (ii) One general hospital in an area should be designated as the preferred receiving centre for cases of poisoning, to be known as the District Centre. It should have an adequate laboratory service.
- (iii) The District Centre should be in the charge of a physician specially interested in cases of poisoning, who should be designated to deal with such patients. He should be able to call on the services of a consultant anaesthetist or psychiatrist. He or his deputy should be available for consultation at any time by casualty officers throughout the district. He should, also, with the help of the hospital pharmacist, instruct the junior staff of the casualty department in up-to-date methods of treatment of poisoning. Financial allowance should be made for these special duties.
- (iv) Specialised techniques, such as the use of the artificial kidney, should be carried out only at what may be called the Regional Poisoning Treatment Centre.
- (v) An information service on poisoning should be set up with central arrangements for co-ordination.

* "Emergency Treatment in Hospital of Cases of Acute Poisoning". Report of the Sub-Committee of the Standing Medical Advisory Committee of the Central Health Services Council, London: H.M. Stationery Office, 1962.

- (vi) The increasingly rapid appearances of new drugs make it desirable to have a centre of academic research on toxicology. This recommendation should be discussed with the Medical Research Council.
- (vii) A committee should be set up without delay to consider the identification marking of commercial tablets and capsules.

5. As far as we have been able to ascertain these proposals have been acted upon as follows:

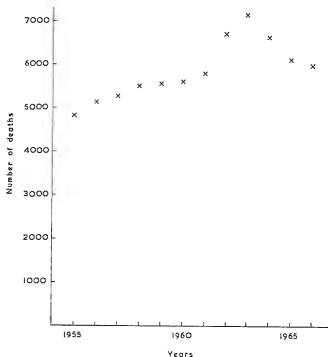
- (i) Such handbooks and works of reference are available to many, but not all, accident and emergency departments.
- (ii) In each hospital region under the National Health Service in England and Wales, but not in Scotland, regional and district treatment centres have been nominally "designated", though the extent to which they function actively in this respect is variable. In fact, so far as we can tell, cases of poisoning tend to be received at any local accident and emergency centre. Further, the supporting laboratory services are often inadequate.
- (iii) Physicians specially interested in clinical toxicology have not emerged, nor have the arrangements intended to arise from this proposal been put into effect, except in a few special centres.
- (iv) Special facilities, like haemodialysis, are available to all regions when they are needed for treating acute poisoning.
- (v) A comprehensive poisons information service is now operating throughout the United Kingdom.
- (vi) The Medical Research Council has, since 1950, maintained a Toxicology Research Unit at Carshalton, Surrey, but this is devoted to experimental toxicology. Discussions have taken place between the Health Departments and the Medical Research Council but, as yet, no research centre has been established in clinical toxicology.
- (vii) The move to ensure that tablets and capsules should be readily identifiable has made only limited progress. When, in 1962, this suggestion was referred to the Minister of Health's Standing Pharmaceutical Advisory Committee the reply was to the effect that, for technical, legal, economic and ethical reasons, "no further consideration be given to this question". Nevertheless, an increasing number of firms have now embarked, at their own initiative, on distinctive and recognisable markings for their own solid dose preparations and the British Medical Association and the Pharmaceutical Society are known to have a joint committee actively examining the problem.

STATISTICS—MORTALITY

6. In England and Wales the total deaths from all forms of poisoning increased progressively from 4,277 in 1955 to a peak of 6,398 in 1963, but in the succeeding three years they decreased. In Scotland the trend was similar (Tables I(a)(b)(c) and Figure 1).

Figure 1

DEATHS FROM POISONING IN THE UNITED KINGDOM
(ICD E 870 - E 875 and E 970 - E 973)



7. The General Register Office codes the entries on death certificates. These are made by doctors, coroners and procurators fiscal who have individual habits of death certification. A verdict of accidental death, suicidal death or an open verdict is made by the coroner. Open verdicts are counted for statistical purposes with accidental deaths. In our view the result is an over-estimate of the proportion of deaths attributable to accidental poisoning. As far as ingested poisons are concerned we believe that the majority of the deaths in adults are the result of deliberate self-administration. Accidental death from ingested poisons is met with almost exclusively in children under ten years of age.

8. The crude death rates from poisoning for several other countries have been assembled in Table II. These suggest that the incidence of fatal poisoning in England, Wales and Scotland is, by comparison, high. Again, this may lead to false conclusions. Death certification, registration and coding practices are not uniform internationally. A high death rate from poisoning may simply reflect that this is a favoured method for self-destruction in a particular country. Elsewhere, other means may be preferred. The corresponding figures for the overall suicide rate, displayed in Figure 2, suggest this. Death rates alone are invalid as a measure of the efficacy of treatment. For this purpose they would need to be related to the total incidence of poisoning, both fatal and non-fatal, and for this there are no reliable, comparable figures.

9. Examination of the age specific death rates from poisoning for England and Wales (Table III) indicates that the overall reduction from 1963 to 1966 has been due chiefly to fewer deaths in the older age groups. Between five and twenty-five years there has been little change in the rates. Change in population structure, however, does not account for the overall fall in mortality in 1964-66; the standardised death rate also fell.

10. The chief agents of fatal poisoning are still carbon monoxide, barbiturates and salicylates (Table IV). Another large group is made up of "other analgesic and soporific drugs".* Alcohol, industrial solvents, corrosives, caustics, gases and vapours other than carbon monoxide, agricultural chemicals and household products contribute to a much smaller extent. A large number of deaths are due to some unclassified poison or to an unknown poison. To some extent, however, this classification tends to be over-simplified, as it is based on the principal poison involved. Self-poisoning is often and increasingly undertaken with a mixture of substances or with preparations containing more than one ingredient.

11. From 1963 to 1966 the deaths from carbon monoxide poisoning decreased in England and Wales from 4,033 to 2,882 (Table IV). This reduction largely accounted for the overall fall in the incidence of fatal poisoning and it coincides with a change in the composition of town's gas, which now contains less carbon monoxide.

12. Between 1960 and 1966 there was a steady increase in the deaths due to barbiturates and to "other analgesic and soporific drugs", most of them supplied only on medical prescription. By 1966 the barbiturate deaths had not increased

* Under this heading the tranquillisers, anti-depressants and other psychotropic drugs are included, but this present classification is unsatisfactory.

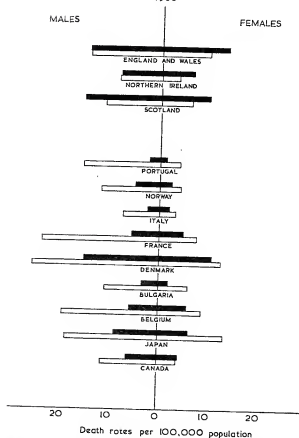
Figure 2

POISONING AND SUICIDE DEATHS IN
VARIOUS COUNTRIES

1963

MALES

FEMALES



Deaths from poisoning

Deaths from all forms of suicide including poisoning

as much as would have been expected if the trend over the previous ten years had persisted. The suggestion is that, as a cause of death, their place has been taken by other tranquillisers and psychotropic drugs. It is interesting in this connection to note the trend in prescribing of these drugs under the National Health Service over a similar period of years (Table V).

13. Between 1957 and 1964 deaths among patients admitted for the treatment of poisoning in England and Wales fell from 32.9 per thousand to 18.9 per thousand (Table VIIa). There is some evidence that this was due both to a greater number of less severely poisoned patients being admitted and also to improved management and methods of treatment.

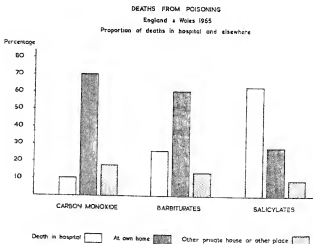
14. It has not been possible for us to determine whether or not there has been any significant difference between the death rate in large hospitals as compared with small ones.

15. Some 80 per cent of the deaths from poisoning occurred outside hospital (Table VI and Figure 3). This applied particularly to deaths from carbon monoxide and the barbiturates and points to the importance of prevention if the total mortality from poisoning is to be substantially reduced.

STATISTICS—MORBIDITY

16. Some measure of the total incidence of poisoning, both fatal and non-fatal, is afforded by the Hospital In-Patient Enquiry for England and Wales,

Figure 3



based on a 10 per cent sample of all persons discharged from or dying in National Health Service hospitals (Table VIIa) and the Hospital In-Patient Study in Scotland covering all the discharges from and deaths in National Health Service hospitals in that country (Table VIIb). For our considerations the sum of discharges and deaths may be regarded as equivalent to total admissions. It can be seen that between 1957 and 1964 the hospital admissions for poisoning in England and Wales increased no less than three-fold. Undoubtedly, a great deal more acute poisoning, especially by self-administration, now occurs, and this has been particularly noticeable over the last few years, even though the figures relating to those taken into hospital may have increased to some extent by a changing policy of admission.

17. The number of patients classified on discharge or death as having suffered from poisoning by barbiturates and other analgesic and soporific substances has continued to rise, but the proportion due to barbiturates has fallen, especially in 1963 and 1964. The overall increase under this heading is therefore attributable, we think, to more self-poisoning with the newer tranquilisers and other psychotropic drugs. However, in any such analyses by single causative agent the frequency with which patients have taken more than one drug is obscured.

STATISTICS—CHILDREN

18. The figures related to poisoning in childhood are shown in Tables VIIIa and VIIIb and Figure 4. From these it can be seen that there has been an increase in the number of deaths between 1960 and 1966 from 107 to 183. The majority of these may be regarded as accidental. Between the ages of one and five years poisoning is now the fourth commonest cause of death in hospital.

19. Table VIIIb sets out the number of admissions to hospital (derived from the sum of discharges and deaths) of children who have been poisoned. Children under the age of 15 make up about 25 per cent of all patients taken into hospital because of poisoning. By contrast to adults, however, the death rate is lower.

20. Figure 4 also shows that most of the children admitted are young toddlers and that boys are more numerous than girls. Children of this age are exploring their environment and are not able to appreciate the consequences of their actions. They may take anything they find around the house, so that compared to adults they take a wide variety of poisons. To some extent the substances involved reflect their availability in ordinary households and it is therefore not surprising that aspirin, the commonest drug to be found in most houses, is a frequent cause of admission of a child to hospital (Table VIIIb). Enquiries to the National Poisons Information Service relate to children twice as frequently as to adults and cover a wide range of substances. This indicates the importance of prevention when considering the problem of poisoning in childhood.

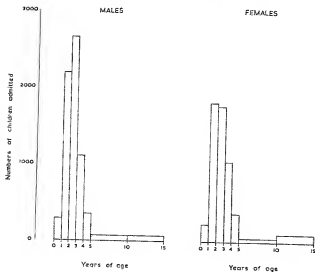
STATISTICS—SPECIAL STUDIES

21. The evidence so far has dealt with mortality and morbidity on a national basis. Recent detailed studies (1) (2) (3) (4) in particular areas and devoted to specific aspects of self-poisoning have produced findings relevant to the management of patients and to the prevention of repeated acts.

Figure 4

CHILDREN ADMITTED TO HOSPITAL FOR TREATMENT OF POISONING
(ICD N960-979)

Hospital In-patient Enquiry 1964



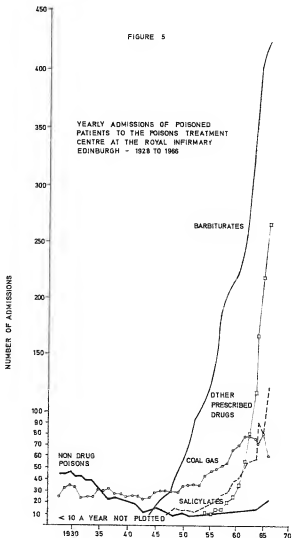
22. The findings in Edinburgh (Figure 5), for example, confirmed recently in Cardiff (2) and the Oxford area (1), illustrate the rapid rise, over recent years, in the practice of self-poisoning. This applies not only to barbiturate overdosage but, strikingly, to other drugs prescribed for mental illness. Although it is only since 1960 that the psychotropic drugs have become prominent in this context, they are now second in importance to the barbiturates among non-fatal cases.

23. Figure 5 also reveals that nearly all of the recent rise was accounted for by drugs obtainable only on medical prescription. Over the past few years many

- (1) Evans, J. G. (1967). "Deliberate Self-Poisoning in the Oxford Area". *Brit. J. prev. soc. Med.* 21, 97.
- (2) Graham, J. D. P. and Hitchens, R. A. N. (1967). "Acute Poisoning and its Prevention". *Brit. J. prev. soc. Med.* 21, 108.
- (3) Kessel, N. (1965). "Self-Poisoning". *Brit. med. J.*, 2, 1265 and 1336.
- (4) Kessel, N. and McCulloch, W. (1966). "Repeated Acts of Self-Poisoning and Self-Injury". *Proc. roy. soc. Med.*, 59, 89.

FIGURE 5

YEARLY ADMISSIONS OF POISONED
PATIENTS TO THE POISONS TREATMENT
CENTRE AT THE ROYAL INFIRMARY
EDINBURGH - 1928 TO 1966



more potent drugs have been developed for the treatment of mental disorders and the prescribing figures, to which reference has already been made (Table V) show that they have been supplied on a progressively larger scale.

24. Young people were particularly involved (1) (2) (3), especially girls and young women; indeed, one out of every 500 girls in Edinburgh between the ages of 15 and 19 poisoned herself in a single year.

25. Married women, especially those under 20, were more liable to take poison than those who were single (1) and, among married people, marital disharmony was a major precipitating factor (2) (3).

26. Salicylates were taken predominantly by teenagers, whereas barbiturates and domestic gas were used proportionately more by older people (1) (2) (3).

27. Higher rates of self-poisoning were found in urban than in rural areas (1) and were associated with overcrowding and family dislocation (3).

28. About two-thirds of self-poisoning acts were carried out on sudden impulse and were not long premeditated (3).

29. Of those admitted with poisoning, about 20 per cent required care but no treatment, nearly 70 per cent required supportive management and only about 10 per cent were so severely affected as to need intensive care, i.e. resuscitative and, in some cases, eliminative measures (1).

30. On physical recovery less than 10 per cent of patients who had taken poison were found to be psychotic, about 60 per cent were suffering from neurosis or personality abnormality and the remainder showed no formal psychiatric illness and could be described as having suffered only an acute situational reaction (3).

31. In Edinburgh about 40 per cent of the men and 8 per cent of the women taking poison were alcoholics, and about half of the men and a quarter of the women had been drinking just before the act took place. Many of these people subsequently exhibited severe withdrawal symptoms, complicating their ward management whilst still physically ill (3).

32. Two-thirds of the patients were admitted to hospital for poisoning during the evening and overnight compared with one-third during the normal working hours of the day (i.e. 8 a.m. to 5 p.m.), and there was a tendency for the admissions to be higher at weekends (1).

33. About a third of the poisoned patients were referred by their general practitioners, another third were brought in as emergencies by the police or the ambulance service and the remainder were brought by relatives or friends, arrived on their own or were transferred from other hospitals (3).

34. In 1961 the Ministry of Health issued a circular to all hospitals (H.M.(61) 94) recommending that any patient attempting suicide should be seen by a psychiatrist before discharge. We could not ascertain the extent to which this suggestion had been implemented throughout the country. In the Cardiff area, 27 per cent of self-poisoned patients in the larger hospitals received in-patient psychiatric care after physical recovery, but only 7 per cent in the smaller

hospitals. In Edinburgh, where each patient was seen by a psychiatrist whilst in the ward, 26 per cent were sent for further psychiatric in-patient treatment, 38 per cent were recommended for out-patient treatment by a psychiatrist or social worker and for 36 per cent no further specialist treatment was considered necessary. The severity of physical intoxication of the patient did not correlate with the need for psychiatric care.

35. Most of the patients remained in hospital for only two to four days, the length of stay rising with age. 7.5 per cent of patients did not spend even one night in the ward and only 2 per cent were kept more than a fortnight. The length of stay would have been less if psychiatric beds had been more easily available when patients were ready for transfer (3).

36. About one in five of people taking poison repeated the act within one year and four-fifths of these patients were readmitted to hospital. Repeat episodes occurred usually within two or three months of the original act. This was especially so among single people, those whose marriage had ended, those whose original act had been impulsive, alcoholics and those who were drug-dependent and those in the 25-34 age group (3) (4). In Edinburgh 1.6 per cent of patients who had been in the ward killed themselves within one year.

37. Studies in Newcastle-upon-Tyne show that children from all social backgrounds are involved but that the child is less likely to be poisoned if he is the only one in the family, possibly because his mother is able to watch him more carefully. Occasionally adults may poison the child by mistake, but the young toddler usually swallows the poison of his own accord as part of the exploration of his environment. The most important single factor in the acquisition of the poison is that in the large majority of cases the drug or other substance concerned is left in an unsuitable place; i.e. the danger could have been anticipated. The majority of containers have tops which are easily removed by the child or are open at the material time. Too often the contents resemble sweets. The lessons for prevention here need no emphasis.

THE PROBLEM FOR THE GENERAL PRACTITIONER

38. Although the general practitioner is called at the time of crisis, i.e. at the time of poisoning, to less than half of the poisoned patients who are admitted to hospital, he is later involved in the further care of the great majority.

39. The limited figures* which are available suggest that the average general practitioner encounters only a few cases of poisoning in a year, more of these being accidental poisoning in children rather than self-poisoning in adults.

40. When a general practitioner is called to a patient his principal concern is with first-aid measures—putting the patient into a safe position, making sure that the airway is unobstructed, maintaining respiration, protecting against injury during convulsions. The object will be to make the patient safe for transport to hospital rather than to carry out remedial measures at the site.

* Kindly supplied by Dr. G. K. H. Hodgkin and by the Records Unit of the Royal College of General Practitioners.

41. Where accidental poisoning has occurred in a child it is essential that there should be a careful follow-up in every case. The health visitor should see the home and instruct the parents about precautions to be taken so that the incident shall not be repeated.

42. When patients are discharged from hospital after self-poisoning the general practitioner should be notified immediately and, if necessary for further care, he should have the assistance of the mental health service of the local authority.

TRANSPORT TO HOSPITAL

43. No data were available to us about the distances at present covered by ambulances taking poisoned patients to hospital, about the times taken on such journeys or the frequency with which death occurs en route.

44. We feel strongly that whenever an ambulance is called to transport a patient believed to be suffering from poisoning the driver should be accompanied by a trained attendant.

45. We are of the opinion that the first priorities of the ambulance personnel are to see that the patient is correctly positioned, that there is a clear airway, that respiration is maintained, that inhalation of vomitus and secretions is avoided, that patients who are convulsing are protected and that oxygen is administered to patients suffering from carbon monoxide poisoning. When these provisions are ensured the time in transit is not of primary importance. In cases of doubt or difficulty the ambulance personnel should take the patient immediately to the nearest doctor or hospital. This may well apply to children who are convulsing because, for them, medical attention is particularly urgent.

46. In some areas the ambulance personnel may obtain medical guidance on any of these aspects from the relevant accident and emergency centres by two-way radio linkage, which should be encouraged and extended.

47. There is no indication for ambulance personnel to administer antidotes, except oxygen for carbon monoxide poisoning.

48. Ambulance drivers should have clear instruction about the hospitals to which they should take poisoned patients, both adults and children (see paragraphs 50 and 51 below).

49. Wherever possible, the ambulance personnel should see that the patient is accompanied by a relative or friend and that any drug or poison containers, unused tablets, capsules, etc., are also brought to the hospital.

ACCIDENT AND EMERGENCY CENTRES

50. Patients seen first of all by a doctor will normally be taken to the appropriate designated treatment centre (see paragraphs 57 and 58 below). Others, not seen by a doctor, will go to such a centre if it is nearby.

51. However, a proportion of patients, including some undiagnosed and some who are too ill, will be sent first of all to the nearest accident and emergency centre. We therefore suggest that all recognised accident and emergency centres should be staffed and equipped to carry out the initial treatment of poisoning.

52. Some of these patients, especially children, will have been poisoned accidentally. In adults the explanation that the act was accidental should never be accepted without searching enquiry. But where the medical staff, after careful assessment, are convinced that the act was accidental and, further, that the physical condition is such that no prolonged medical treatment is required, then these patients may be discharged.

53. If, on the other hand, these accidentally poisoned patients are more seriously ill, arrangements for their admission should be made to a designated poisons treatment centre or to a paediatric treatment unit. This may be in the same hospital as that to which the accident and emergency centre is attached, or transfer elsewhere may have to be arranged. In this latter event the medical staff at the accident and emergency centre should make certain that adequate preliminary treatment has been carried out and that the necessary support during transit can be ensured.

54. Patients who have poisoned themselves deliberately may be more or less severely ill physically. Whatever their physical condition it is our considered view that they should never be sent home without undergoing psychiatric assessment. This will mean, in effect, that virtually all of them should be taken to a designated poisons treatment centre.

ADMISSION OF CHILDREN

55. The arrangements for admitting poisoned children to hospital will be similar to those for dealing with adults who have been poisoned accidentally. In general, the child should be taken to the nearest accident and emergency centre where a decision can be taken as to whether admission is necessary. The nearest paediatric unit will normally be the place to which the child will be admitted. If the family doctor has seen the child and decided that in-patient treatment is indicated he should, of course, contact the paediatric unit directly. Should the journey to the accident and emergency centre, or to the paediatric unit, be a long one and likely to take an hour or more, the child should, if possible, be seen first of all either at a local hospital or by a family doctor to ensure that no harm will ensue during the journey.

56. Where possible, accident and emergency centres should have staff who are used to dealing with children and should also have the facilities and equipment for children which are appropriate to their special needs. Recent reports* have drawn attention to this important matter. Close co-operation between the accident and emergency centre staff and that of the local paediatric unit is also essential so that expert advice can always be obtained. It should be remembered that children take a very wide variety of substances and the Poisons Information Service may be invaluable in finding out exactly what chemicals the child has taken and how toxic they are likely to be.

* (1) "Accident Services of Great Britain and Ireland", second report of Review Committee (Chairman: H. Osmond-Clarke), 1965, British Medical Association, London.

(2) "Memorandum on the Management of Accidents in Childhood", prepared by the Standing Committee on Accidents in Childhood of the British Paediatric Association, 1967, *Brit. med. J.*, 2, 103.

DESIGNATED POISONING TREATMENT CENTRES

57. The Atkins' Sub-Committee recommended that "one general hospital in an area should be designated as the preferred receiving centre for cases of poisoning, to be known as the District Centre". This is a principle with which we strongly agree. We would go even further; we are of a mind that all accidentally poisoned patients requiring in-patient management and all self-poisoned patients, whether or not seriously ill physically, should ultimately go to the appropriate designated poisons treatment centre—or paediatric unit in the case of children.

58. As a general rule such a designated poisoning treatment centre should be based on the concept of the district general hospital. It should have facilities for intensive care (not exclusively for poisoned patients), adequate psychiatric and social services and the requisite laboratory facilities (see below).

59. It is very desirable that, at each such centre, at least one consultant should be specially interested in clinical toxicology and available to advise on, or direct, the management of poisoned patients. Moreover, to facilitate and improve management, nursing care and psychiatric supervision, the admission of poisoned patients into one or two particular wards may be an advantage.

60. Our evidence suggests that elaborate techniques for eliminating the drug from the body, e.g. haemodialysis, are indicated in only 1 to 2 per cent of all admissions for poisoning. We believe that the number of cases who would require treatment by these techniques in a district general hospital would be too small to ensure a high standard of skill in the staff responsible for haemodialysis if this were provided only for the treatment of poisoning. However, where facilities for haemodialysis are available for other purposes—and this will apply increasingly to district general hospitals—it would be wise to site the designated poisoning treatment centre in the same hospital as that equipped for haemodialysis.

LABORATORY FACILITIES FOR DESIGNATED POISONING TREATMENT CENTRES

61. Hitherto, the assistance to be derived from the biochemical laboratory for the diagnosis and, more so, the treatment of acute poisoning has often been limited and the customary resuscitative measures have been carried out without close laboratory control. This state of affairs should not persist. Because the range of toxic drugs to hand, either for accidental or self-poisoning, continues to grow; because there is a turning away from the familiar barbiturates to the newer psychotropic agents; because multiple poisoning (including alcohol), rather than that from a single drug, is becoming the vogue; because laboratory techniques are developing—for all these reasons we believe that reliance on the laboratory will become more essential in the future, not only for the identification and assay of the toxic substances, but also for the accurate management of their effects.

62. Bearing in mind our scheme for the hospital management of poisoned patients (see above), we consider that the laboratory service for the detection and control of cases of acute poisoning should be part of a biochemical laboratory

serving a general hospital or group of hospitals—again the district general hospital concept.

63. The apparatus necessary for this work, particularly an ultra-violet spectrophotometer, a gas-liquid chromatograph and blood pH-Pco₂ equipment, should normally be to hand in a laboratory of this size. Specialised procedures involving, e.g. spectrofluorimetry, are excepted.

64. Allowance in space and staff must be made for the needs of the toxicology service in these laboratories. In each there should be one biochemist primarily responsible for toxicological analyses. Considering the demand also for other biochemical emergency work, e.g. blood urea, sugar and acid-base studies, the staffing, including that of technicians, will have to be organised for emergency cover and planned on a rota throughout each 24 hours of a 7-day week.

65. As a minimum the laboratory should be able to carry out, at short notice, qualitative and quantitative tests for blood carbon monoxide, salicylates, alcohol, barbiturates (with group identification) and iron, and qualitative urinary phenothiazines. At present, identification of many of the new drugs requires specialised procedures, but as methodological advances occur the hospital biochemical laboratory must be ready to extend its list.

66. In addition to these general laboratories, we think there should be a few specialised and more highly developed toxicological laboratories able to carry out more exceptional studies in identifying and assaying for the newer drugs and drug mixtures, and also to conduct biochemical research (see also paragraph 77).

PSYCHIATRIC SERVICES

67. The incidence of self-poisoning is now of "epidemic" proportions. The hope for reducing its extent probably lies less with treatment than with primary prevention. To this we refer again in paragraph 78.

68. Measures designed to treat the associated mental illness and to prevent repetition are, nonetheless, within our remit. The same measures, incidentally, would serve as primary preventive devices. This is not a matter, simply, of "after-care", but is an integral part of treatment, and the hospital services must be designed, or modified, to encompass it.

69. The occasion of a self-poisoning act is no more than an incident of crisis in a psychological illness or in a social predicament. All cases of deliberate self-poisoning should therefore receive psychological and social evaluation and help. The physical condition resulting from the poisoning is no indication of the extent to which such help is needed. Further, as already emphasised (paragraph 52), the decision that an act of self-poisoning was accidental and not deliberate should not be made without probing enquiry. A psychological and social evaluation needs to be made whatever the motive may appear to have been without distinguishing between "suicidal gesture", "attempted suicide" and other such formulations.

70. Psychological and social investigations should begin when the patient is first seen at hospital, the interviewing of relatives or other informants being

essential and being omitted only under the most exceptional circumstances. Then, as soon as possible, a psychiatric history should be obtained from the patient and a psychiatric examination should be carried out, followed, if necessary, by further investigations. A diagnosis should be made and treatment commenced forthwith. Ideally, for this purpose, there should be a psychiatric unit in the same hospital. Until this is everywhere the practice arrangements must be made for psychiatrists and social workers to be available every day of the week, whether these personnel are employed by the general hospital or detached for a considerable part of each day from the local psychiatric hospital.

71. Thereafter, the patient may be transferred to in-patient psychiatric care or may be discharged home, where continuing psychiatric and/or social support will generally be needed and should be provided in collaboration with the general practitioner and local authority mental health service. It is preferable that the on-going psychiatric and/or social supervision should be conducted by the same personnel as have looked after the patient in the ward. From the point of view of management there is no doubt that it is inefficient to block beds in an acute medical unit. The psychiatric unit, wherever it may be situated, must be able to accept patients requiring admission without delay.

ARRANGEMENTS AFTER DISCHARGE

72. The need for continuing psychiatric care has already been emphasised. Since repeated acts of self-poisoning are especially likely to occur within three months of the previous act it is particularly important to provide for observation and supervision by a psychiatrist, social worker or general practitioner during this period.

73. Alcoholics are particularly prone to repeated acts of self-poisoning (and, indeed, to subsequent suicide). It is therefore important to diagnose alcoholism if it is present and to arrange for the appropriate specialist treatment.

74. It follows from the high rate of repeated acts that it is a danger to allow these patients subsequently to have access to even that quantity of hypnotic, sedative or tranquillising drugs that might properly be supplied on a single prescription to other patients. There should be the greatest circumspection in prescribing by the hospital and the family doctor. Moreover, evidence we have been given regarding the high proportion of self-poisoning acts that are impulsive suggests that it would help if the general practitioner could advise that no unused supplies (prescribed for the patient or other members of the household) should lie about the house, ready to hand at a moment of crisis.

75. The Committee considers that these simple measures might prevent the occurrence of many repeated acts of self-poisoning. By the same token, they would operate to reduce the incidence of the practice *ab initio*. So would restraint in the sale of aspirins in large quantities over the pharmacist's counter and in other shops.

76. Statements, however vague, by patients after discharge that they are contemplating or intend doing it again should be regarded seriously and are indications for further preventive action.

RESEARCH

77. In addition to the district treatment centres throughout the country, there is need for centres regionally spaced and with highly developed support (see paragraph 66), where more specialised treatment can be undertaken, where research can be conducted and where training in clinical toxicology can be given.

PREVENTION OF POISONING

78. Although a detailed study of the prevention of poisoning was outside the terms of reference of this committee, we find it difficult completely to separate prevention and management. We think that the whole problem of prevention is of the greatest importance, perhaps especially where children are concerned, and deserves further urgent consideration, with particular reference to the identification of tablets, capsules, etc., the labelling of bottles and containers, the storage of medicines and domestic fluids in the home and the early recognition of psychiatric illness and of stressful situations.

RECOMMENDATIONS

*79. The classification of poisons adopted internationally and by the Registrar-General in this country has a heading for "other analgesic and soporific drugs", within which the newer psychotropic drugs are included, along with many older drugs. We urge that a more specific classification should be adopted by the Registrar-General to allow identification of deaths or illness due to new individual or groups of drugs. The attention of the World Health Organisation should also be drawn to this need. (Paragraphs 10, 12.)

80. No information is available about ambulance journeys for poisoned patients, the distances travelled, the time taken, the number of deaths in transit or emergency measures provided en route. For the future, relevant records should be maintained. (Paragraph 43.)

81. We recommend that all ambulances conveying poisoned patients should have, besides the driver, a trained attendant; that all emergency ambulance personnel should be trained in the handling of poisoned patients; that ambulances so used should be appropriately equipped; that ambulance drivers should have clear directions about the destination of poisoned patients in an emergency, i.e. to the nearest accident and emergency centre or designated poisoning treatment centre; that instructions should be given for any relatives, neighbours, etc., who can be informative about the patient and any relevant containers, tablets, capsules to be conveyed to hospital with the patient. Indeed, we think it important that those responsible for the ambulance services in this country should be made aware of our recommendations. (Paragraphs 44, 45, 46, 47, 48, 49.)

82. All accident and emergency centres should be staffed and equipped for dealing with cases of acute poisoning, children as well as adults. They should have to hand up-to-date works of reference and be aware of the telephone numbers of the poisons information service. (Paragraphs 5, 51, 55, 56.)

* The unsatisfactory classification to which this refers is that of the 7th Revision of the International Classification of Diseases, in which all drugs and poisons were divided into 20 classes. From the start of 1968 the 8th Revision of the I.C.D. will be used. In this there are 300 categories of poisons and drugs. The increased sub-division may solve many of the difficulties previously encountered.

83. Poisoning treatment centres, on the basis of the district general hospital or its existing complex, should be established, equipped, staffed and designated throughout the country. At each of these centres, moreover, there should be at least one consultant specially interested and available to advise on, or direct, the management of poisoned patients. (Paragraphs 57, 58, 59, 60.)

84. Every designated poisoning treatment centre should have associated laboratory facilities for carrying out at least the detection and quantitative estimation of carbon monoxide, alcohol, barbiturates, salicylates and iron in blood; and phenothiazines in urine, qualitatively only, at short notice throughout the 24 hours and should be appropriately equipped and staffed to afford this cover. (Paragraphs 61, 62, 63, 64, 65, 66.)

85. All cases of deliberate self-poisoning should be referred to a designated poisoning treatment centre, regardless of the seriousness or otherwise of their medical condition. The explanation that a self-poisoning act was accidental should never be accepted without searching enquiry. All cases of deliberate self-poisoning should receive psychiatric evaluation and social help. (Paragraphs 7, 34, 52, 69, 70, 71.)

86. The designated poisoning treatment centres should be sited in hospitals with a psychiatric unit able to provide the emergency services. A seven-day psychiatric cover must be provided. It is important that beds in acute medical units should not be blocked by patients awaiting psychiatric care. It is most desirable that the same team responsible in the hospital for psychiatric and social care should be responsible for the follow-up arrangements. Statements by patients, however vague, indicating an intention to repeat the act should be regarded seriously, and patients suffering from alcoholism should be diagnosed and referred for suitable treatment. (Paragraphs 70, 71, 72, 73, 76.)

87. Specialised poisoning treatment units should be established, with more advanced support, so that research may be carried out, new methods of treatment developed and training given in clinical toxicology. (Paragraph 77.)

88. Although the subject of poisoning prevention was beyond our terms of reference, we look upon this as most important and consider that it should be given special study by the Central Health Departments. We think that the majority of deaths from poisoning in children are avoidable. (Paragraphs 2, 15, 20, 37, 41, 67, 78.)

89. Finally, we wish to reiterate the recommendations of the Sub-Committee on the Emergency Treatment in Hospital of Cases of Acute Poisoning (1962) that all medicines in solid dose form should be readily identifiable, possibly by some agreed method of coding. Further, we consider that the containers of all prescribed and dispensed medicines should be labelled with the name of the contents and directions for use, unless the prescriber expressly directs the dispenser otherwise. (Paragraphs 5, 78.)

APPENDIX

TABLE Ia Deaths from Poisoning, England and Wales, 1955-1966

Cause	Sex	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966*
Accidental poisoning by solids, liquids, gases and vapours E870-E895	Males	528	525	545	588	608	659	667	822	928	780	765	814
	Females	645	643	641	716	750	813	811	1,009	1,144	982	878	954
	Persons	1,173	1,168	1,186	1,304	1,358	1,472	1,478	1,831	2,072	1,762	1,643	1,768
Suicide and self-inflicted injury, poisoning by solids, liquids and gases E970-E973	Males	1,633	1,810	1,845	1,914	1,877	1,906	1,889	2,125	2,272	2,138	1,923	1,805
	Females	1,471	1,633	1,663	1,674	1,680	1,638	1,740	1,902	2,054	2,020	1,851	1,791
	Persons	3,104	3,443	3,508	3,588	3,557	3,544	3,629	4,027	4,326	4,158	3,774	3,596
Total poisoning (E870-E895 + E970-E973)	Males	2,161	2,335	2,390	2,502	2,485	2,565	2,556	2,947	3,200	2,918	2,688	2,619
	Females	2,116	2,276	2,304	2,390	2,430	2,451	2,551	2,911	3,198	3,002	2,729	2,745
	Persons	4,277	4,611	4,694	4,892	4,915	5,016	5,107	5,858	6,398	5,920	5,417	5,364

* Provisional Figures.

TABLE 1b

Deaths from Poisoning, Scotland, 1955-1966

Cause	Sex	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966*
Accidental poisoning by solids, liquids, gases and vapours E870-E895	Males	112	102	130	132	136	126	170	215	184	145	161	126
	Females	134	122	129	166	143	147	164	185	139	155	132	111
	Persons	246	224	259	298	279	273	334	400	323	300	293	237
Suicide and self-inflicted injury, poisoning by solids, liquids and gases E970-E973	Males	133	139	160	162	170	140	162	203	185	137	151	151
	Females	118	113	114	113	121	113	120	145	121	138	138	122
	Persons	251	252	274	275	291	253	282	348	306	275	289	273
Total poisoning (E870-E895 + E970-E973)	Males	245	241	290	294	306	266	332	418	369	282	312	277
	Females	252	235	243	279	264	260	284	330	260	293	270	233
	Persons	497	476	533	573	570	526	616	748	629	575	582	510

* Provisional Figures.

TABLE 1c Deaths from Poisoning, Northern Ireland, 1955-1966

Cause	Sex	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966*
Accidental poisoning by solids, liquids, gases and vapours E870-E895	Males	18	14	9	8	21	16	17	19	16	25	28	18
	Females	10	9	7	14	19	15	12	19	23	27	21	14
	Persons	28	23	16	22	40	31	29	38	39	52	49	32
Suicide and self-inflicted injury, poisoning by solids, liquids and gases E970-E973	Males	17	16	18	11	8	18	23	22	32	29	27	26
	Females	6	14	14	8	18	13	19	16	22	22	17	24
	Persons	23	30	32	19	26	31	42	38	54	51	44	50
Total poisoning (E870-E895 + E970-E973)	Males	35	30	27	19	29	34	40	41	48	54	55	44
	Females	16	23	21	22	37	28	31	35	45	49	38	38
	Persons	51	53	48	41	66	62	71	76	93	103	93	82

* Provisional Figures.

TABLE II Deaths from poisoning *Effects of poisons (N960-N979)*
Rates per 100,000 population, 1963

Country	Persons	Males	Females
Canada	5.2	6.3	4.1
Japan	7.4	8.9	6.1
Belgium	5.9	5.9	5.8
Bulgaria	2.6	3.4	1.9
Denmark	12.9	15.1	10.8
France	5.2	5.5	4.9
Italy	2.1	2.4	1.9
Norway	3.7	4.9	2.4
Portugal	1.7	2.2	1.3
England and Wales ...	14.1	14.6	13.7
Northern Ireland...	7.3	8.2	6.5
Scotland	12.7	15.5	10.0

Source: "World Health Statistics Annual", 1963, Vol. I, p. 441.

TABLE III Deaths from poisoning (I.C.D. Nos. N960-N979)
million persons, 1963-1966, England and Wales†

Age specific death rates per

Age	MALES				FEMALES			
	1963	1964	1965	1966	1963	1964	1965	1966
0-	26	30	30	33	12	29	29	32
1-	36	36	41	32	21	32	23	32
5-	4	6	5	10	4	4	5	4
15-	71	57	62	64	36	36	31	36
25-	115	112	96	101	86	68	69	70
35-	150	140	144	139	121	111	112	108
45-	184	190	170	170	168	157	153	168
55-	285	239	217	196	221	228	199	179
65-	333	297	256	239	295	281	246	246
75-	564	448	440	412	496	402	327	345
85 and over	795	728	542	651	614	535	460	466
S.M.R.*	161	146	141	132	187	174	158	159

* The Standardised Mortality Ratio (S.M.R.) shows the number of deaths from a specific cause registered in the year of experience as a percentage of those which would have been expected in that year had the sex/age mortality from the specific cause in a standard period (1950-52) operated on the sex/age population of the year of experience.

† Similar figures are not available for Scotland or Northern Ireland.

TABLE IV Deaths from Poisoning by Specific Agent†, England and Wales‡, 1960-1966

ICD No. N Code	Cause	Sex	1960	1961	1962	1963	1964	1965	1966
968	Poisoning by carbon monoxide ...	Males Females	2,028 1,692	1,928 1,694	2,116 1,841	2,150 1,883	1,859 1,553	1,658 1,292	1,606 1,276
969	Poisoning by other gases and vapours ...	Males Females	49 26	76 27	75 29	69 36	66 37	74 44	78 44
971	Poisoning by barbituric acid and derivatives	Males Females	372 566	434 656	616 860	798 1,066	803 1,195	820 1,195	824 1,231
972	Poisoning by aspirin and salicylates ...	Males Females	91 139	124 166	106 157	133 177	144 178	113 151	93 162
974*	Poisoning by other analgesic and soporific drugs ...	Males Females	20 34	12 20	30 31	43 42	39 47	65 73	67 97
979	Poisoning by other and unspecified substances ...	Males Females	43 26	51 36	70 40	69 61	79 69	71 38	51 43

* N974 includes sedatives other than opiates, barbiturates and bromides; tranquilisers; anticonvulsants and mixtures of drugs containing these substances.

† Classes of drugs omitted from this table included less than 50 deaths a year. The class N979 includes drugs rarely used for poisoning, together with any unclassifiable drugs or mixture of drugs or poisoning where the drug or agent is unknown.

‡ Similar figures are not available from Scotland or Northern Ireland.

TABLE V Annual numbers of prescriptions* dispensed in England and Wales
(Figures in millions)

	1961	1962	1963	1964	1965	1966
Barbiturates	15.2	15.8	15.9	16.1	17.2	16.8
Non-barbiturate hypnotics ...	3.4	2.6	2.5	2.6	2.7	3.0
Tranquillisers	6.2	6.6	7.1	9.0	10.9	13.0
Anti-depressants	1.4	2.0	2.4	2.8	3.5	3.9

This table does not include drugs issued in hospitals.

* The amount prescribed per prescription has not decreased during the period.

TABLE VI Deaths from Poisoning, England and Wales, 1965. Type of Institution in which death occurred.*

Cause of death	ICD No.	TOTAL DEATHS		Psychiatric hospitals				Other hospitals and institutions for the care of the sick				Other institutions		At deceased person's own home		In other private houses and other places	
				N.H.S.		Other than N.H.S.		N.H.S.		Other than N.H.S.							
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
EFFECTS OF POISONS																	
Poisoning by:	N960-N979	2,868	2,842	16	16	—	1	514	651	3	11	6	6	1,751	1,842	578	315
carbon monoxide ...	N968	1,638	1,292	—	1	—	—	149	142	1	6	2	2	1,130	993	376	148
other gases and vapours ...	N969	74	44	—	—	—	—	23	20	—	—	—	—	38	17	13	7
barbituric acid and derivatives ...	N971	820	1,195	9	8	—	—	186	311	—	3	3	3	484	734	138	136
aspirin and salicylates ...	N972	113	151	3	3	—	1	72	87	—	—	—	—	25	49	13	11
other analgesic and soporific drugs ...	N974†	65	73	1	2	—	—	30	26	—	2	—	1	26	24	8	8
other and unspecified substances ...	N979	71	38	3	1	—	—	27	26	2	—	—	—	25	10	14	1

* Similar figures are not available from Scotland or Northern Ireland.

† N974 includes sedatives other than opiates, barbiturates and bromides; tranquilisers; anticonvulsants and mixtures of drugs containing these substances.

TABLE VIIa
Admissions to Hospital for Treatment of Poisoning—England and Wales
Hospital In-patient Enquiry for 1957-1964, based on a 10 per cent sample of hospital discharges, including deaths.

	1957	1958	1959	1960	1961	1962	1963	1964
<i>All poisoning</i>								
Admissions to hospital ...	15,900	17,500	20,200	23,300	27,900	33,600	45,900	50,400
Percentage of all General Medical and Paediatric admissions ...	—	—	3.2	3.6	4.1	4.8	6.2	6.8
Deaths in hospital ...	523	563	477	445	541	649	887	952
Deaths per 1,000 admissions ...	32.9	32.2	23.6	19.1	19.4	19.3	19.3	18.9
<i>All analgesics and sedatives N970-N974</i>								
Admissions to hospital ...	9,200	10,500	12,100	14,400	17,700	21,300	31,000	34,900
Deaths in hospital ...	—	—	218	200	322	449	570	451
Deaths per 1,000 admissions ...	—	—	18.0	20.1	18.2	21.1	18.4	12.9
<i>Barbituric acid and derivatives N971</i>								
Admissions to hospital ...	6,100	6,600	7,500	8,800	10,500	12,100	16,500	16,300
Deaths in hospital ...	—	—	197	176	187	293	370	301
Deaths per 1,000 admissions ...	—	—	26.3	20.0	17.8	24.2	22.4	18.5
<i>Aspirin and salicylates N972</i>								
Admissions to hospital ...	2,300	2,500	3,000	3,800	5,200	6,200	9,800	11,800
Deaths in hospital ...	—	—	21	93	125	125	106	97
Deaths per 1,000 admissions ...	—	—	7.0	24.5	24.0	20.2	10.8	8.2
<i>Carbon monoxide N968</i>								
Admissions to hospital ...	1,900	2,300	2,200	2,200	2,400	2,700	3,700	2,900
Deaths in hospital ...	—	—	187	114	135	146	158	183
Deaths per 1,000 admissions ...	—	—	85.0	51.8	56.3	54.1	42.7	63.1

TABLE VIIb Admissions to Hospital for Treatment of Poisoning—Scotland
Hospital In-patient Statistics, 1961–1965

	1961	1962	1963	1964	1965
<i>All poisoning</i>					
Admissions to hospital ...	2,796	3,186	3,722	3,991	4,409
Percentage of all General Medical and Paediatric admissions	2.9	3.6	4.2	4.3	4.6
Deaths in hospital ...	76	87	66	75	73
Deaths per 1,000 admissions...	27.1	27.3	17.1	18.8	16.6

TABLE VIIIa Statistics relating to Deaths from Poisoning in Childhood, England and Wales, 1960-1966

Year	Effect of poisons N960-N979		Carbon monoxide N968		Barbituric acid and derivatives N971		Aspirin and salicylates N972	
	Children under 15 years	Adults 15 years and over	Children	Adults	Children	Adults	Children	Adults
1960	107	5,084	66	3,654	4	934	14	216
1961	110	5,226	50	3,572	8	1,082	8	282
1962	121	5,964	70	3,887	3	1,473	9	254
1963	129	6,525	73	3,960	3	1,861	8	302
1964	168	6,009	103	3,309	3	1,995	15	307
1965	164	5,546	89	2,861	3	2,012	8	256
1966	183	5,512	108	2,774	6	2,049	3	252

TABLE VIIIb
Estimated Number of Discharges and Deaths by Age Groups and Nature of Poisons
Hospital In-patient Enquiry, England and Wales

Year	Effect of poisons N960-N979		Carbon monoxide N968		Barbituric acid and derivatives N971		Aspirin and salicylates N972		All others	
	Children under 15 years	Adults 15 years and over	Children	Adults	Children	Adults	Children	Adults	Children	Adults
1960	6,610	16,720	110	2,070	550	8,210	1,440	2,340	4,510	4,100
1961	7,490	20,420	70	2,320	560	9,970	1,910	3,270	4,940	4,870
1962	8,910	24,670	100	2,550	710	11,380	2,060	4,130	6,040	6,610
1963	10,990	34,940	150	3,590	670	15,790	3,380	6,250	6,600	9,320
1964	13,270	37,130	120	2,780	860	15,420	4,710	7,140	7,590	10,810